

Attorney Docket No. 0025-013

Application No. 10/784,102

IN THE CLAIMS

Please amend the claims as follows:

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- 1 1. (currently amended) A camera module apparatus, comprising:
2 a camera integrated circuit chip;
3 a lens; and
4 a molding formed made on the camera integrated circuit chip for holding the lens such that
5 the lens is positioned thereby in relation to the integrated circuit chip.
- 1 2. (original) The camera module apparatus of claim 1, wherein:
2 the camera integrated circuit chip is mounted on a printed circuit board.
- 1 3. (original) The camera module apparatus of claim 1, further comprising:
2 a protective cover over the integrated circuit chip.
- 1 4. (original) The camera module apparatus of claim 3, wherein:
2 the protective cover is a molded spacer.
- 1 5. (original) The camera module apparatus of claim 3, wherein:
2 the protective cover is a glass sheet.
- 1 6. (original) The camera module apparatus of claim 1, wherein:
2 the molding has a recess for receiving the lens.
- 1 7. (original) The camera module apparatus of claim 1, wherein:
2 the lens is held in place on the molding by an adhesive.
- 1 8. (original) The camera module apparatus of claim 1, wherein:
2 the molding has a recess for positioning the lens relative to the integrated circuit chip.

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- 1 9. (currently amended) An integrated camera circuit and lens module, comprising:
2 a camera integrated circuit;
3 a holder ~~formed~~ made at least partially on the camera integrated circuit; and
4 a lens assembly; and wherein
5 the lens assembly is affixed to the camera integrated circuit via the holder.
- 1 10. (previously presented) The integrated camera circuit and lens module of claim 9, wherein:
2 the lens assembly is rigidly affixed to the integrated circuit via the holder such that there is
3 a gap between at least a portion of the lens assembly and a sensor array of the integrated circuit.
- 1 11. (previously presented) The integrated camera circuit and lens module of claim 9, wherein:
2 the holder is a molded component.
- 1 12. (previously presented) The integrated camera circuit and lens module of claim 11, wherein:
2 the lens assembly is attached to the holder by an adhesive.
- 1 13. (original) The integrated camera circuit and lens module of claim 9, wherein:
2 the integrated circuit is mounted on a circuit board.
- 1 14. (previously presented) The integrated camera circuit and lens module of claim 9, further
2 comprising:
3 a protective cover held in place over the integrated circuit chip by the holder.
- 1 15. (original) The integrated camera circuit and lens module of claim 14, wherein:
2 the protective cover is a molded spacer.
- 1 16. (original) The integrated camera circuit and lens module of claim 14, wherein:
2 the protective cover is a glass sheet.

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- 1 17. (original) A method for producing a camera module, comprising:
2 molding a receptacle over an integrated circuit;
3 inserting a lens assembly into the receptacle; and
4 securing the lens assembly into the receptacle.
- 1 18. (original) The method of claim 17, wherein:
2 the lens assembly is secured to the receptacle by an adhesive.
- 1 19. (original) The method of claim 17, wherein:
2 the integrated circuit is secured to a circuit board before the receptacle is molded over the
3 integrated circuit.
- 1 20. (original) The method of claim 17, wherein:
2 the receptacle includes a recessed portion for receiving the lens assembly.
- 1 21. (original) The method of claim 20, wherein:
2 the recess portion includes a projection for fixing the distance of the lens assembly from
3 the integrated circuit.
- 1 22. (original) The method of claim 17, wherein:
2 the camera module is affixed to a flex circuit.
- 1 23. (original) The method of claim 17, further comprising:
2 placing a protective cover over the integrated circuit.
- 1 24. (original) The method of claim 23, wherein:
2 the step of placing the protective cover over the integrated circuit occurs during the step of
3 molding a receptacle over the integrated circuit.
- 1 25. (original) The method of claim 23, wherein:
2 the protective cover is a molded spacer.

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1 26. (original) The method of claim 23, wherein:

2 the protective cover is a glass plate.

1 27. (currently amended) A camera apparatus, comprising:

2 an integrated circuit camera apparatus having thereon a photosensitive array; and

3 a lens assembly for focusing light on the photosensitive array; wherein

4 the lens assembly is rigidly affixed on the integrated circuit camera apparatus by a lens

5 assembly receiving apparatus ~~formed~~ made integrally on the integrated circuit camera apparatus.

1 28. (original) The camera apparatus of claim 27, wherein:

2 the lens assembly has a housing for receiving at least one lens.

1 29. (original) The camera apparatus of claim 27, wherein:

2 the lens assembly has a housing for receiving two lenses.

1 30. (original) The camera apparatus of claim 27, wherein:

2 the integrated circuit camera apparatus is affixed to a circuit board.

1 31. (previously presented) The camera apparatus of claim 27, wherein:

2 the integrated circuit camera apparatus is affixed to a circuit board; and

3 the lens assembly receiving apparatus is formed at least partially on the circuit board.

1 32. (original) The camera apparatus of claim 31, wherein:

2 the lens assembly receiving apparatus is a molded receptacle.

1 33. (original) The camera apparatus of claim 31, wherein:

2 the lens assembly is rigidly affixed within the lens assembly receiving apparatus.

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- 1 34. (original) The camera apparatus of claim 31, wherein:
2 the lens assembly is affixed within the lens assembly receiving apparatus by an adhesive.
- 1 35. (previously presented) The camera apparatus of claim 27, further comprising:
2 a protective cover fixed between the integrated circuit camera apparatus and the lens
3 assembly by the lens assembly receiving apparatus.
- 1 36. (original) The camera apparatus of claim 35, wherein:
2 the protective cover is a molded spacer.
- 1 37. (original) The camera apparatus of claim 35, wherein:
2 the protective cover is a glass plate.
- 1 38. (currently amended) The camera apparatus of claim 35, wherein:
2 [[the]] the lens assembly receiving apparatus is an overmold formed over the integrated
3 circuit camera apparatus.
- 1 39. (currently amended) A camera module apparatus, comprising:
2 a camera integrated circuit chip;
3 a lens; and
4 means for holding the lens such that the lens is positioned thereby in relation to the
5 integrated circuit chip, said means for holding the lens including a ~~molded~~ component molded
6 ~~formed~~ on the camera integrated circuit chip.
- 1 40. (previously presented) The method of claim 17, wherein:
2 the step of molding the receptacle over the integrated circuit includes contacting a top
3 surface of the integrated circuit with a mold insert.
- 1 41. (currently amended) The method of ~~claim 17~~ claim 40, wherein:
2 the mold insert includes a compliant surface to protect the integrated circuit.

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1 42. (previously presented) The method of claim 17, wherein:
2 the step of molding the receptacle over the integrated circuit includes simultaneously
3 molding a receptacle over each of a plurality of integrated circuits.

1 43. (previously presented) The method of claim 17, wherein:
2 the step of molding the receptacle over the integrated circuit occurs at a time when the
3 integrated circuit is physically coupled to other integrated circuits.

1 44. (previously presented) The method of claim 43, wherein:
2 the step of molding the receptacle over the integrated circuit includes simultaneously
3 molding receptacles over at least some of the other integrated circuits.

1 45. (previously presented) The method of claim 43, wherein:
2 the integrated circuit and the other integrated circuits are physically coupled by being
3 mounted on a unitary substrate; and
4 the integrated circuit and the other integrated circuits are subsequently separated by
5 dividing the unitary substrate.

1 46. (previously presented) The camera module apparatus of claim 1, wherein:
2 a top surface of the camera integrated circuit chip includes a sensor array; and
3 the molding is adhered to the top surface.

1 47. (previously presented) The integrated camera circuit and lens module of claim 9, wherein:
2 a top surface of the camera integrated circuit includes a sensor array; and
3 the holder is adhered to the top surface.

1 48. (previously presented) The camera apparatus of claim 27, wherein:
2 the photosensitive array is on a top surface of the integrated circuit camera apparatus; and
3 the lens assembly receiving apparatus is adhered to the top surface.